Design of Larva Net

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Design of Net (1) : net shape

Streamline patterns of some basic forms of net

(a) Simple conical net

(b) Conical net with porous collar

(c) Conical net with non-porous mouth-reducing cone

From Tranter and Smith (1968)

For quantitative sampling of plankton UNESCO recommend to use a net of type b or type c

Design of Net (2) : net size 1

from Tranter and Smith (1968)

Porosity ($\beta$): the open area fraction of the gauze comprising the filtering surface

$$\beta = \frac{m^2}{(d+m)^2}$$

Mesh (m): one of the open spaces (pore) in a net, enclosed by the strands

d: the diameter of the strands

Relationship between mesh width/strand diameter and porosity
Design of Net (3) : net size 2

Open area ratio (R): the ratio of the open area of a net to the area of its mouth

\[ R = \frac{a \cdot \beta}{A} \]

A: area of the mouth
a: the porous area of the net

UNESCO recommends to design a net with R value more than 5 to reduce net clogging.

Clogging: the process by which the porosity and filtering area ratio of a net are progressively reduced by particles which adhere to the strands of gauze during filtration.